

United States
Environmental Protection
Agency

Region 10
1200 Sixth Avenue
Seattle, WA 98101

Alaska
Idaho
Oregon
Washington

ENVIRONMENTAL ASSESSMENT:
REISSUANCE OF A NPDES GENERAL PERMIT FOR OIL AND GAS EXPLORATION,
DEVELOPMENT AND PRODUCTION FACILITIES LOCATED IN STATE AND FEDERAL
WATERS IN COOK INLET, ALASKA

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DRAFT

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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 10

1200 Sixth Avenue

Seattle, WA 98101

Reply to
Attn. Of: OWW-130

FINDING OF NO SIGNIFICANT IMPACT (FONSI)

To all interested government agencies,
public groups, and individuals:

In accordance with the Environmental Protection Agency (EPA) procedures for complying with the National Environmental Policy Act (NEPA), 40 CFR Part 6, Subpart F, EPA has completed an environmental review of the following proposed action:

**Reissuance of the National Pollutant Discharge Elimination System (NPDES)
General Permit for Oil and Gas Exploration, Development, and Production Facilities
Located in State and Federal Waters in Cook Inlet, Alaska**

Permit No. AKG-31-5000

EPA ROLE AND RESPONSIBILITY:

Under the National Environmental Policy Act of 1969 (NEPA), major federal actions that could significantly affect the quality of the environment must undergo an environmental review.

Issuing a NPDES permit to "new sources" is considered a major federal action. New sources are defined as any facility that discharges pollutants where construction commenced after the effective date of applicable New Source Performance Standards (NSPS) (40 CFR Part 122.2). NSPS for Offshore Subcategory facilities (facilities in Territorial Seas or Federal Waters), were promulgated on March 4, 1993. For Coastal Subcategory facilities (those located in Coastal Waters), NSPS were promulgated on December 16, 1996. Any new development and production facilities covered under the reissued Cook Inlet NPDES general permit are considered new sources. New sources do not include new exploratory facilities. Since new sources would be covered under the NPDES general permit, the permit is subject to NEPA review as required under EPA's NEPA implementing regulations at 40 CFR Part 6.

EPA's NEPA compliance responsibilities include "cross-cutting" statutes, i.e., Endangered Species Act, National Historic Preservation Act, the Executive Order on Environmental Justice, the Executive Order on Consultation and Coordination with Indian Tribal Governments, and Executive Orders on wetlands, floodplains, farmland, and biodiversity. The NEPA compliance program requires analysis of information regarding potential impacts, including environmental, cultural, and public health impacts; development and analysis of options to avoid or minimize potential impacts; and development and analysis of measures to

mitigate potential adverse impacts. Areas of consideration under NEPA may include natural resources and cultural, social, and economic issues.

EPA has developed an Environmental Assessment (EA) to evaluate the potential environmental and socioeconomic effects associated with reissuing the NPDES general permit. Because EPA has regulatory authority for only the NPDES discharges, this EA focuses primarily on the water quality impacts associated with the new source NPDES discharges and the cumulative effects associated with existing sources. However, EPA's responsibilities under NEPA include the full disclosure of all potential environmental impacts related to the proposed action. As such, potential impacts other than those associated with the NPDES discharges are described in the EA. The EA is attached and is incorporated by reference into this FONSI.

BACKGROUND

Oil and gas exploration and production activities have occurred in the Cook Inlet basin for more than 50 years. In the late 1950s and the 1960s, several commercial oil and gas fields were discovered. Many of the commercial-sized fields discovered during that time are still in production today. From the 1960s to the end of 2001, approximately 1,030 million barrels of oil and 978 million barrels of water were produced mainly from four main offshore oil fields in upper Cook Inlet. At the height of oil production in 1970, the Cook Inlet region produced 80 million barrels annually. By the end of 1975, about 514 million barrels of oil and 61 million barrels of water had been produced – about 50 percent of the total amount of oil and 6 percent of the total amount of water produced from the offshore platforms through 2001. By 1983, production had declined to 24.7 million barrels, and by 2001, production had declined to just under 10 million barrels annually. Cumulative production between 2004 and 2009 is an estimated 42.6 million barrels. Oil production in Cook Inlet is expected to continue to 2016.

Producible quantities of natural gas were first discovered in 1959 in what is known as the Kenai Gas Field. Gas production in the Cook Inlet region did not begin until 1960. Cook Inlet natural gas production reached 217 billion cubic feet (bcf) per year in 1984 and peaked at 223 bcf in 1996. Natural gas production has remained relatively stable at an average of 213 bcf per year from 1997 to 2001. In 2003, gas production was at 208 bcf per year, and cumulative production from 2004 through 2009 is an estimated 1,131 bcf. Natural gas production in Cook Inlet is expected to continue beyond 2022.

The NPDES general permit (previously numbered AKG-28-5000), expired April 1, 2004, but continues to be in effect until reissued for the existing facilities which were covered prior to its expiration. The expired permit authorized discharges from exploration, development, and production facilities located north of the line extending across Cook Inlet at the southern end of Kalgin Island. It also authorized discharges from exploration facilities in State and Federal waters north of the line between Cape Douglas on the west side of Cook Inlet and Port Chatham on the east side (EA Figure 2-1).

Eighteen facilities were active within the area of coverage during the five year period of the expired permit (EA Table 2-1). Other facilities that were covered by the permit included three exploratory drilling wells (Fire Island, Sturgeon, Sunfish), the Steelhead blowout relief well, and the North Forelands platform.

Oil and gas are extracted from numerous wells associated with production and development platforms. Oil is generally produced in emulsion with water and must be separated from the water. Gas is generally produced with significantly less water than with oil production. There are various ways in which oil and gas are separated from the produced water. Some of the production platforms are equipped to separate oil and gas from produced water onboard and discharge produced water directly to Cook Inlet. Other production platforms perform initial oil/water separation and route their produced water to onshore facilities (Granite Point, Trading Bay, and East Foreland) for further treatment. In these cases, produced water is discharged from the onshore facility. Under the expired NPDES general permit, produced water is authorized to be discharged from the following facilities: Granite Point Production Facility, Trading Bay Treatment Facility, East Forelands Treatment Facility, and platforms Anna, Baker, Bruce, Platform A (Tyonek), Cross Timbers Platform A, Cross Timbers Platform C, and Spark.

Occasionally, operators may decide to stop platform operations, thus, ceasing production and subsequent discharges for some period of time. These facilities may resume production and discharging during the effective period of the reissued permit. At this time, the platforms Baker, Dillon, Spurr, and Spark have ceased operations and, with the exception of deck drainage, are not discharging. Sanitary waste water is also discharged from the Baker and Dillon platforms.

PURPOSE AND NEED OF ACTION

The purpose of the proposed action is to reissue the NPDES general permit (to be renumbered AKG-31-5000), with certain modifications. Reissuance of the NPDES general permit is needed to allow existing oil and gas exploration, development, and production facilities in Cook Inlet to continue operating. The reissued permit would also expand the area of coverage into the area in southern Cook Inlet (EA Figure 2-2) to authorize discharges from development, exploration, and production facilities under the Minerals Management Service (MMS) lease sales 191 and 199 and the adjoining State waters (via State lease sales). Discharges from new development, exploration, and production facilities located in the existing area of coverage would also be authorized.

AGENCY PREFERRED ALTERNATIVE

EPA's Preferred Alternative, **Alternative 1**, involves the proposed reissuance of the NPDES general permit for oil and gas exploration, development, and production facilities located in State and Federal waters in Cook Inlet. The proposed general permit would retain many of the provisions in the expired permit for existing source facilities in Cook Inlet. Proposed changes to the existing NPDES general permit that would be part of Alternative 1 include the following:

- Expand the existing coverage area to include the Minerals Management Service Lease Sales Nos. 191 and 199 and the State waters adjoining those lease sales.
- Authorize discharges from oil and gas exploration facilities located within the expanded coverage area, including discharges associated with the use of synthetic-based drilling fluids.

- Authorize discharges from new oil and gas development and production facilities located within the expanded coverage area, including sanitary waste water, domestic waste water, deck drainage, and miscellaneous discharges such as cooling water and boiler blowdown. These new development and production facilities, however, would not be authorized to discharge produced water, drilling fluids, or drill cuttings.
- Add new whole effluent toxicity and technology-based limits for discharges that contain treatment chemicals, such as biocides and corrosion inhibitors. These discharges include, but are not limited to, flood waste water, cooling water, boiler blowdown, and desalination unit waste water.
- Add new sheen monitoring requirements for produced water discharges.
- Add a new water quality-based effluent limit for total residual chlorine.
- Increase the monitoring requirements for facilities that violate effluent limits, and reduce monitoring for facilities that demonstrate a good compliance record.
- Require compliance with technology-based limits for treatment chemicals that are added to waterflood and other miscellaneous discharges.
- Expand existing requirements to include baseline studies for new facilities.
- Include a new study that will involve collecting ambient data to determine the effect of large volume produced water discharges on Cook Inlet.
- Expand the permit's discharge prohibition near protected areas, coastal marshes, and deltas from 1,000 meters to 4,000 meters.
- Change the permit number from AKG-28-5000 to AKG-31-5000.

The area of coverage would include waters in three different regulatory categories. The portion of Cook Inlet north of the southern edge of Kalgin Island is defined as inland or Coastal Waters; the area south of that line is defined as offshore waters. The offshore waters in southern Cook Inlet are further divided into two categories. The first three miles measured from the coastline or the boundary between coastal and offshore waters is defined as the Territorial Seas. Seaward of the territorial seas is defined as the contiguous zone or ocean, referred to as Federal waters (EA Figure 2-2).

OTHER ALTERNATIVES CONSIDERED

Two alternatives to the preferred alternative were considered and evaluated, as well as a no action alternative. Those alternatives are described below.

Alternative 2

Under this alternative, the area of coverage of the proposed permit would be expanded and be identical to that of Alternative 1. All provisions of the NPDES general permit reissuance would be identical to Alternative 1 except for the following:

- Produced water discharges at existing facilities in upper Cook Inlet, which are currently authorized under the expired NPDES general permit subject to an oil and grease monthly average limit of 29 mg/L and a daily maximum limit of 42 mg/L, would not be allowed. All produced water from both existing and new source facilities would be reinjected into subsurface geological formations.

Alternative 3

The area of coverage of the NPDES general permit reissuance under this alternative would be expanded and be identical to that of Alternative 1. All provisions of the NPDES general permit reissuance would be identical to Alternative 1 except the following:

- The discharge of produced waters would be allowed for new sources (new development and production facilities) but only in waters greater than 10 meters in depth. Discharges would be subject to the current oil and grease monthly average, and daily maximum limits, and the proposed new procedures for monitoring sheens would be applied to all produced water discharges.

Alternative 4 – No Action

Under this alternative, the area of coverage would remain the same. All provisions in the new general permit would be identical to the expired NPDES permit except for the following:

- The permit number for the NPDES general permit would be proposed to be changed from AKG-28-5000 to AKG-31-5000.
- Discharges from new development and production facilities in lower Cook Inlet would not be authorized.
- The new area corresponding to MMS lease sales 190 and 191, and adjoining State waters, would not be added to the area of coverage.

EVALUATION OF ALTERNATIVES

The EA, which is attached hereto and incorporated by reference into this FONSI, examined the potential effects of the preferred alternative (Alternative 1), Alternative 2, Alternative 3, and the no action alternative (Alternative 4), on 12 resource areas and areas of environmental and socioeconomic concern: geology; climate and meteorology; oceanography; marine water quality; biological resources; threatened and endangered species; socioeconomic conditions; land and shoreline use and management; transportation and infrastructure; recreation,

tourism, and visual resources; cultural, historical, and archaeological resources; and environmental justice.

Implementation of the preferred alternative (Alternative 1) would result in a combination of long-term minor beneficial and long-term minor adverse effects. Long-term minor adverse effects on marine water quality, biological resources, and threatened and endangered species would occur. Effects to threatened or endangered species would mostly be associated with noise and other disturbances caused by exploration, development, and production activities. Long-term minor beneficial economic effects would be realized through development and production of existing and New Sources. No cumulative effects would be expected. The proposed NPDES general permit would contain water-quality based limits and monitoring requirements that are necessary to attain state water quality standards and federal criteria. The implementation of these limitations and conditions would maintain the water quality of Cook Inlet and prevent unreasonable degradation of the marine environment.

Implementation of Alternative 2 would result in a combination of long-term minor beneficial and long-term minor adverse effects. Long-term minor adverse effects on biological resources and threatened and endangered species would occur. Effects to biological and threatened or endangered species would mostly be associated with noise and other disturbances caused by exploration, development, and production activities. Long-term minor beneficial effects on marine water quality are predicted because existing sources, along with new sources, would not be allowed to discharge produced water under Alternative 2. Long-term minor beneficial economic effects would be realized through development and production of existing and new sources. No cumulative effects would be expected.

Implementation of Alternative 3 would result in effects largely the same as those stated for Alternative 1 above.

Implementation of the no action (Alternative 4) would have no effects.

ENDANGERED SPECIES ACT (ESA)

Section 7 of the Endangered Species Act requires Federal agencies to consult with NOAA Fisheries and the U.S. Fish and Wildlife Service (USFWS) if their actions have the potential to either beneficially or adversely affect any threatened or endangered species. EPA has determined that the preferred alternative is not likely to adversely affect any threatened or endangered species. During the NEPA process, EPA initiated consultation with NOAA Fisheries and USFWS in order to meet its obligations under the Endangered Species Act. A Biological Evaluation (BE) was submitted to NOAA Fisheries and USFWS for review on January 23, 2006. The fact sheet and the proposed NPDES general permit will be also submitted to NOAA Fisheries and USFWS for review during the public comment period. EPA will obtain concurrence with its determination from NOAA Fisheries and USFWS prior to issuing the final permit.

ESSENTIAL FISH HABITAT (EFH)

The Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA) requires EPA to consult with NOAA Fisheries when a proposed discharge has the potential to adversely affect an EFH. EPA will consult with NOAA Fisheries to ensure that the discharges authorized by the proposed NPDES general permit are not likely to adversely affect EFH or associated species. An EFH assessment was sent on January 23, 2006 to NOAA Fisheries for review. EPA will also submit the fact sheet and the proposed permit to NOAA Fisheries for review during the public comment period.

MITIGATION MEASURES/PERMIT CONDITIONS

To lessen the potential for adverse environmental impact to environmental resources the following mitigation measures shall become binding permit conditions upon the permittees. If the permittees fail to comply with the permit conditions, the responsible official within EPA may consider applying any of the enforcement procedures specified in the Clean Water Act Sections 308 and 309, 33 U.S.C. §§ 1318 and 1319.

- The proposed NPDES general permit contains water quality-based and technology-based limits and monitoring requirements that are necessary to attain state water quality standards and federal criteria. Permittees must comply with all applicable local, state, and federal codes, statutes, and regulations. The implementation of these limitations and conditions would maintain the water quality of Cook Inlet and prevent unreasonable degradation of the marine environment.
- The proposed NPDES general permit does not authorize discharges of produced water, drilling fluids, or drill cuttings from new source development and production facilities.
- The proposed NPDES general permit increases the setback distances for discharges of drilling fluids and drill cuttings from exploratory facilities from 1,000 meters of sensitive areas to 4,000 meters.
- The proposed NPDES general permit establishes new limits on both the amount of treatment chemicals added, and toxicity, for discharges such as water flood waste water and cooling water.
- The proposed NPDES general permit establishes more stringent limits for total residual chlorine.
- The proposed NPDES general permit requires two new studies to gain a better understanding of the potential impacts of the discharges. Specifically, the proposed permit requires operators of all new facilities installed during the permit's five-year term to conduct baseline monitoring. The proposed permit also includes ambient monitoring requirements for large volume produced water discharges. Operators are required to collect sediment and water column samples to determine the ambient pollutant concentration in the vicinity of the discharges.

SUMMARY

Based on the EA and consideration of the proposed NPDES general permit conditions, and in accordance with the guidelines for determining the significance of proposed federal actions (40 C.F.R. 1508.27) and EPA criteria for initiating an Environmental Impact Statement (EIS) (40 C.F.R. 6.605), EPA has concluded that the proposed NPDES general permit will not result in a significant effect on the environment.

In accordance with NEPA regulations at 40 C.F.R. Part 1508.13, the findings of the EA are hereby incorporated by reference. The proposed permit will not significantly affect land use patterns or population, wetlands or flood plains, threatened or endangered species, farmlands, ecologically critical areas, historic resources, air quality, water quality, noise levels, fish and wildlife resources, nor will it conflict with approved local, regional, or state land use plans or policies. The proposal also conforms with all applicable federal statutes and executive orders. As a result of these findings, EPA has determined that an EIS will not be prepared.

Comments supporting or disagreeing with this FONSI may be submitted, within 60 days of the release of this FONSI, to:

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U.S. Environmental Protection Agency
1200 Sixth Avenue, OWW-130
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Additional copies of the EA and FONSI can be obtained by calling Hanh Shaw at (206) 553-0171 or sending an email to shaw.hanh@epa.gov. The documents are also available from the EPA Alaska Operations Office, Room 537, 222 West 7th Avenue, in Anchorage, or are available for public review on EPA's website at www.epa.gov/r10earth/water/npdes.htm. The public may also review the documents at the following local libraries:

Z.J. Loussac Public Library, 3600 Denali Street, Anchorage
Kenai Community Library, 163 Main Street Loop, Kenai
Homer City Library, 141 West Pioneer Avenue, Homer

No administrative action will be taken for at least 60 days after the release of this FONSI. EPA will fully consider all comments before taking final action.

Michael F. Gearheard, Director
Office of Water and Watersheds

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EXECUTIVE SUMMARY

INTRODUCTION

The U.S. Environmental Protection Agency (EPA) proposes to reissue the National Pollutant Discharge Elimination System (NPDES) general permit (expired Permit No. AKG285000, to be renumbered AKG315000) for oil and gas exploration, development, and production facilities in Cook Inlet, Alaska. This environmental assessment (EA) addresses the potential consequences associated with new sources to be covered under the reissued permit as well as cumulative impacts due to existing sources. The upper Cook Inlet and Kenai Peninsula have an association with the petroleum industry that dates back to the 1950s. The first discovery in the region took place onshore in 1957, when oil was discovered on the Kenai Peninsula. Producing quantities of natural gas were first discovered in 1959 in what is now the Kenai Gas Field. Gas production in the Cook Inlet region did not begin until 1960.

The expired general permit, which became effective on April 1, 1999, and expired on April 1, 2004, authorized discharges from exploration, development, and production facilities north of a line extending across Cook Inlet at the southern end of Kalgin Island. It also authorized discharges from exploration facilities in state and federal waters north of the line between Cape Douglas (at 58° 51' N latitude, 153° 15' W longitude) on the west side of Cook Inlet and Port Chatham (at 59° 13' N latitude, 151° 47' W longitude) on the east side. The general permit authorized discharges from 23 facilities operated by Unocal, Cross Timbers, Marathon, Phillips, ARCO, Forest Oil, and Forcenergy.

EPA proposes a number of changes to the expired permit. The area of coverage is proposed to be expanded to coincide with the area under the Minerals Management Service (MMS) lease sales 191 and 199. That new coverage area also includes territorial seas adjoining the federal waters south of Kalgin Island and north of Shuyak Island. The project area is in the Cook Inlet Outer Continental Shelf Planning Area. Discharges from exploratory facilities in that area are proposed to be authorized by the reissued permit. Although EPA does not, at this time, propose to authorize the discharge of produced water, drilling fluids, or drill cuttings from development and production facilities in the area covered by the new MMS lease sales, some discharges from those new source facilities are also proposed to be authorized. Those new source discharges include sanitary wastewater, domestic wastewater, deck drainage, and miscellaneous discharges such as cooling water and boiler blowdown. Discharges associated with the use of synthetic-based drilling fluids from exploration facilities are proposed to be authorized within the new lease area.

Water quality based-limits under the expired permit have been reexamined on the basis of current dispersion modeling practices and the use of a 100-meter mixing zone. New whole-effluent toxicity and technology-based limitations are proposed to be added for discharges to which treatment chemicals, such as biocides and corrosion inhibitors, are added. Those chemically treated sea water discharges can include waterflood wastewater, cooling water, boiler blowdown, and desalination unit wastewater. Also proposed is a change to the permit's monitoring frequency requirements that would result in increased monitoring for discharges that violate the permit's limitations. Likewise, for some pollutants that have been shown to be discharged in

concentrations that are not likely to violate the permit's limitations, the monitoring frequency is proposed to be decreased.

PROPOSED ACTION AND ALTERNATIVES

EPA (Region 10) proposes to reissue the NPDES general permit (No. AKG285000) for existing source facilities located in Cook Inlet. The proposed permit (No. AKG315000) is included in this EA as Appendix A. Discharges to be authorized by the proposed permit are from facilities regulated under the Coastal and Offshore Subcategories of the Oil and Gas Extraction Point Source Category (40 CFR Part 435 Subparts A and D). The facilities are oil and gas operations associated with wellheads located in Cook Inlet. This section of the EA describes the proposed action and identifies alternatives addressing the disposal of produced waters.

Proposed Action (Alternative 1). The proposed action (also referred to as Alternative 1) would maintain many of the provisions that exist in the expired NPDES general permit No. AKG285000 for existing source facilities located in Cook Inlet. Proposed changes to the existing NPDES permit that would be part of Alternative 1 are listed below.

- The permit number for the NPDES general permit is proposed to be changed from AKG285000 to AKG315000.
- The area of coverage for the general permit is proposed to be expanded to include the area in southern Cook Inlet under MMS lease sales 191 and 199 and the adjoining state waters (via state lease sales). The proposed NPDES general permit would also authorize discharges from development, exploration, and production facilities in that area and in the existing area of coverage in northern Cook Inlet.
- Although EPA does not, at this time, propose to authorize the discharge of produced water, drilling fluids, or drill cuttings from new development and production facilities, other discharges from those “new source” facilities are proposed to be authorized. Discharges from new source facilities that are proposed to be authorized include sanitary wastewater, domestic wastewater, deck drainage, and miscellaneous discharges such as cooling water and boiler blowdown. Discharges associated with the use of synthetic-based drilling fluids from exploration facilities are also proposed to be authorized in offshore subcategory waters. Offshore subcategory waters include the federal waters and territorial seas in Cook Inlet and are located south of Kalgin Island.
- The expired permit's prohibition on discharge within 1,000 meters of sensitive areas will be expanded to 4,000 meters.
- New sheen monitoring requirements are proposed for produced water discharges. If a sheen is observed in the vicinity of the discharge, operators will be required to collect and analyze a produced water sample for compliance with the oil and grease limitations.
- Water quality-based limits under the expired permit have been reexamined on the basis of current dispersion modeling practices, the use of mixing zones proposed by the Alaska

Department of Environmental Conservation (ADEC), and Ocean Discharge Criteria. New whole-effluent toxicity limitations are proposed to be added for discharges to which treatment chemicals, such as biocides and corrosion inhibitors, are added; chemically treated seawater discharges can include waterflood wastewater, cooling water, boiler blowdown, and desalination unit wastewater.

- Technology-based limits would be proposed for the treatment chemicals that are added to waterflood and other miscellaneous discharges.
- Changes to the permit's monitoring frequency requirements are also proposed. The changes would result in increased monitoring for discharges that violate the permit's limitations. Correspondingly, the required monitoring frequency is proposed to be decreased for those dischargers that demonstrate a good record of compliance with the permit's limits.
- A new water quality-based limit for Total Residual Chlorine is proposed to be added.
- The expired general permit's baseline study requirement is proposed to be expanded to include all new facilities.
- A new study is proposed that will involve the collection of ambient data to analyze the fate of large-volume produced water discharges.

Two alternatives to the proposed action were also considered and evaluated, as well as a no action alternative.

Alternative 2. Under Alternative 2, the area of coverage of the NPDES general permit would be expanded and be identical to that of the proposed action (Alternative 1). All provisions of the NPDES general permit would be identical to Alternative 1 except for the following:

- Produced water discharges at existing facilities in upper Cook Inlet, which are currently authorized under the expired NPDES permit subject to an oil and grease monthly average limit of 29 mg/L and a daily maximum limit of 42 mg/L, would not be allowed. All produced water from both existing and new source facilities would be reinjected into subsurface geological formations.

Alternative 3. Under Alternative 3, the area of coverage of the NPDES general permit would be expanded and be identical to that of the proposed action (also referred to as Alternative 1). All provisions of the NPDES general permit would be identical to Alternative 1 except for the following:

- The discharge of produced waters would be allowed for new sources (new development and production facilities) but only in waters greater than 10 meters in depth. Discharges would be subject to the current oil and grease monthly average, and daily maximum limits, and the proposed new procedures for monitoring sheens would be applied to all produced water discharges.

No Action (Alternative 4). As prescribed by Council on Environmental Quality (CEQ) regulations, the EA also evaluated the no action alternative (also referred to as Alternative 4 in the EA). Under this alternative, the area of coverage of the expired NPDES general permit would remain the same. All provisions in the new NPDES general permit would be identical to the expired NPDES permit (No. AKG285000) except for the following:

- The permit number for the NPDES general permit would be proposed to be changed from AKG285000 to AKG315000.
- Discharges from new development and production facilities in lower Cook Inlet areas covered under the expired permit would not be authorized.
- The new area corresponding to MMS lease sales 190 and 191 would *not* be added to the area of coverage.

ENVIRONMENTAL CONSEQUENCES

The EA evaluates the potential effects on geology; climate and meteorology; oceanography; marine water quality; biological resources; threatened and endangered species; socioeconomic conditions; land and shoreline use and management; transportation and infrastructure; recreation, tourism, and visual resources; cultural, historical, and archaeological resources; and environmental justice. For each resource, the predicted effects from the four alternatives are briefly described below.

CONSEQUENCES OF THE PROPOSED ACTION (ALTERNATIVE 1)

Geology

No effects would be expected.

Climate and Meteorology

No effects would be expected.

Oceanography

No effects would be expected.

Marine Water Quality

Long-term minor adverse effects would be expected. On the basis of the Cook Inlet Discharge Monitoring Study, produced water discharges from existing sources were slightly toxic to practically nontoxic (MMS 2003). The water quality of lower Cook Inlet generally is good. The proposed NPDES permit would contain the limitations and conditions that are necessary to attain state water quality standards and federal criteria, maintain the water quality of Cook Inlet, and prevent unreasonable degradation of the marine environment.

Biological Resources

Long-term minor adverse effects on biological resources would be expected from the implementation of the proposed NPDES permit under Alternative 1. Permitted discharges from new sources in the area covered by MMS lease sales 191 and 199 and adjoining territorial seas would include sanitary wastewater, domestic wastewater, deck drainage, miscellaneous discharges such as cooling water and boiler blowdown, and those associated with the use of synthetic-based drilling fluids from exploration facilities. The impacts of the use of synthetic-based drilling fluids are believed to be of limited duration and are less harmful to the environment than the impacts associated with oil-based drilling fluids. Effects on benthic areas within a limited zone near drilling points (within a few hundred meters) generally have been found to be of limited duration, and the sea floor recovers within 1–2 years. The routine activities associated with exploration in upper Cook Inlet have not had a documented effect on lower trophic-level organisms. It is expected that the routine activities associated with exploration would be similar, and it is expected that there would be no measurable effects on the local populations.

Threatened and Endangered Species

Long-term minor adverse effects on threatened and endangered species would be expected from the implementation of the proposed NPDES permit under Alternative 1. The effects discussed under biological resources above apply equally to threatened and endangered species. Furthermore, with respect to water quality, the Final EIS (FEIS) for the Cook Inlet Planning Area sales concluded that the “[p]otential effects from either or both sales would not cause any overall measurable degradation to Cook Inlet water quality” (MMS 2003). The FEIS concluded that any effects to threatened and endangered species would likely be due to “...noise and other disturbance caused by exploration, development, and production activities and disturbance from aircraft and vessels. For example, in specific areas, particularly near the Barren Islands, these disturbances could affect behavior of Steller sea lions and its critical habitat (haulouts); cause local, short-term effects on the feeding of humpback whales in the Kennedy and Stevenson entrances; and locally affect some Cook Inlet beluga whales.” (MMS 2003).

Socioeconomic Conditions

Long-term minor beneficial economic effects would be expected. Development and production of new lease sales 191 and 199 would generate economic activity primarily in property taxes, employment, and personal income. These economic effects would be in the Kenai Peninsula Borough.

Land and Shoreline Use and Management

No effects would be expected.

Transportation and Infrastructure

No effects would be expected.

Recreation, Tourism, and Visual Resources

No effects would be expected.

Cultural, Historic, and Archaeological Resources

No effects would be expected.

Environmental Justice

No effects would be expected.

Cumulative Effects

No effects would be expected.

CONSEQUENCES OF ALTERNATIVE 2

Geology

No effects would be expected.

Climate and Meteorology

No effects would be expected.

Oceanography

No effects would be expected.

Marine Water Quality

Long-term minor beneficial effects on marine water quality would be expected. Under Alternative 2, existing sources, along with new sources, would not be allowed to discharge produced water. Produced waters would have to be reinjected downhole during development and production. Zero discharge of produced waters through reinjection would reduce or eliminate the release of man-made contaminants from petroleum activities and any associated sedimentation and turbidity in Cook Inlet.

Biological Resources

Long-term minor adverse and beneficial effects could occur. Effects would be largely the same as those stated for Alternative 1 biological resources. Some improvement in water quality could result from the discontinuation of produced water discharges from existing sources in leased areas, though the water quality improvements would be minor and would be unlikely to be significantly beneficial to biological resources in Cook Inlet.

Threatened and Endangered Species

Long-term minor adverse and beneficial effects could occur. Effects would be largely the same as those stated above for biological resources. Some improvement in water quality could result from the discontinuation of produced water discharges from existing sources in leased areas, though it would be unlikely to be significantly beneficial to threatened and endangered species.

Socioeconomic Conditions

Long-term minor beneficial economic effects would be expected. Development and production of new lease sales 191 and 199 would generate economic activity primarily in property taxes, employment, and personal income. These economic effects would be in the Kenai Peninsula Borough.

Land and Shoreline Use and Management

No effects would be expected.

Transportation and Infrastructure

No effects would be expected.

Recreation, Tourism, and Visual Resources

No effects would be expected.

Cultural, Historic, and Archaeological Resources

No effects would be expected.

Environmental Justice

No effects would be expected.

Cumulative Effects

No effects would be expected.

CONSEQUENCES OF ALTERNATIVE 3

Geology

No effects would be expected.

Climate and Meteorology

No effects would be expected.

Oceanography

No effects would be expected.

Marine Water Quality

Long-term minor adverse effects would be expected. On the basis of the Cook Inlet Discharge Monitoring Study, produced water discharges from existing sources were slightly toxic to practically nontoxic (MMS 2003). The water quality of lower Cook Inlet generally is good. The proposed NDPES permit would contain the limitations and conditions that are necessary to attain state water quality standards and federal criteria, maintain the water quality of Cook Inlet, and prevent unreasonable degradation of the marine environment.

Biological Resources

Long-term minor adverse effects on biological resources would be expected. Effects would be largely the same as those stated for Alternative 1 biological resources. The permitting of produced water discharges from new sources would not likely have an effect because it is not expected that production from new sources would occur during the life of the proposed permit. If produced water discharges were to originate from new sources during the life of the permit, the effects on biological resources would be expected to be minor because all discharges would be required to comply with the state of Alaska water quality standards and federal ocean discharge criteria.

Threatened and Endangered Species

Long-term minor adverse effects would be expected. Effects would be largely the same as those stated for biological resources above. It is not expected that production would originate from new sources during the life of the proposed permit, and if produced water discharges were to occur from new sources, the effects on threatened and endangered species would be expected to be minor.

Socioeconomic Conditions

Long-term minor beneficial economic effects would be expected. Development and production of new lease sales 191 and 199 would generate economic activity primarily in property taxes,

employment, and personal income. These economic effects would be in the Kenai Peninsula Borough.

Land and Shoreline Use and Management

No effects would be expected.

Transportation and Infrastructure

No effects would be expected.

Recreation, Tourism, and Visual Resources

No effects would be expected.

Cultural, Historic, and Archaeological Resources

No effects would be expected.

Environmental Justice

No effects would be expected.

Cumulative Effects

No effects would be expected.

CONSEQUENCES OF NO ACTION (ALTERNATIVE 4)

Geology

No effects would be expected.

Climate and Meteorology

No effects would be expected.

Oceanography

No effects would be expected.

Marine Water Quality

No effects would be expected.

Biological Resources

No effects would be expected.

Threatened and Endangered Species

No effects would be expected.

Socioeconomic Conditions

No effects would be expected.

Land and Shoreline Use and Management

No effects would be expected.

Transportation and Infrastructure

No effects would be expected.

Recreation, Tourism, and Visual Resources

No effects would be expected.

Cultural, Historic, and Archaeological Resources

No effects would be expected.

Environmental Justice

No effects would be expected.

Cumulative Effects

No cumulative effects would be expected.

Table ES-1 summarizes the predicted effects for each resource area from all alternatives.

Table ES-1. Summary of Potential Environmental and Socioeconomic Consequences

Environmental and Socioeconomic Consequences				
Resource	Proposed Action (Alternative 1)	Alternative 2	Alternative 3	No Action (Alternative 4)
Geology	No effects	No effects	No effects	No effects
Climate and Meteorology	No effects	No effects	No effects	No effects
Oceanography	No effects	No effects	No effects	No effects
Marine Water Quality	Long-term minor adverse	Long-term minor beneficial	Long-term minor adverse	No effects
Biological Resources	Long-term minor adverse	Long-term minor adverse and beneficial	Long-term minor adverse	No effects
Threatened and Endangered Species	Long-term minor adverse	Long-term minor adverse and beneficial	Long-term minor adverse	No effects
Socioeconomic Conditions	Long-term minor beneficial	Long-term minor beneficial	Long-term minor beneficial	No effects
Land and Shoreline Use Management	No effects	No effects	No effects	No effects
Transportation and Infrastructure	No effects	No effects	No effects	No effects
Recreation, Tourism, and Visual Resources	No effects	No effects	No effects	No effects
Cultural, Historic, and Archaeological Resources	No effects	No effects	No effects	No effects
Environmental Justice	No effects	No effects	No effects	No effects

MITIGATION

To lessen the potential for adverse environmental impact to environmental resources, the following mitigation measures would be incorporated into the draft NPDES general permit as conditions. If the permittees were to fail to comply with these permit conditions, the responsible official within EPA could

consider applying any of the enforcement procedures specified in the Clean Water Act Sections 308 and 309, 33 U.S.C. §§ 1318 and 1319.

- The proposed NPDES general permit contains water quality-based and technology-based limits and monitoring requirements that are necessary to attain state water quality standards and federal criteria. Permittees must comply with all applicable local, state, and federal codes, statutes, and regulations. The implementation of these limitations and conditions would maintain the water quality of Cook Inlet and prevent unreasonable degradation of the marine environment.
- The proposed NPDES general permit does not authorize discharges of produced water, drilling fluids, and drill cuttings from new source development and production facilities.
- The proposed NPDES general permit increases the setback distances for discharges of drilling fluids and drill cuttings from exploratory facilities from 1,000 meters of sensitive areas to 4,000 meters.
- The proposed NPDES general permit establishes new limits on both the amount of treatment chemicals added, and toxicity, for discharges such as water flood waste water and cooling water.
- The proposed NPDES general permit establishes more stringent limits for total residual chlorine.
- The proposed NPDES general permit requires two new studies to gain a better understanding of the potential impacts of the discharges. Specifically, the proposed permit requires operators of all new facilities installed during the permit's five-year term to conduct baseline monitoring. The proposed permit also includes ambient monitoring requirements for large volume produced water discharges. Operators are required to collect sediment and water column samples to determine the ambient pollutant concentration in the vicinity of the discharges.

SECTION 1.0: INTRODUCTION

This environmental assessment (EA) addresses the potential consequences associated with new sources to be covered under the U.S. Environmental Protection Agency's (EPA) proposed reissuance of the National Pollutant Discharge Elimination System (NPDES) general permit (Permit No. AKG310000) for oil and gas exploration, development, and production facilities in Cook Inlet, Alaska. Discharges to be authorized by the proposed permit are from facilities regulated under the Coastal and Offshore Subcategory of the Oil and Gas Extraction Point Source Category (Title 40 of the *Code of Federal Regulations* [CFR], Part 435, Subparts A and D) (Figure 1-1). These facilities are oil and gas operations associated with wellheads in Cook Inlet. The proposed permit is included in this EA as Appendix A.

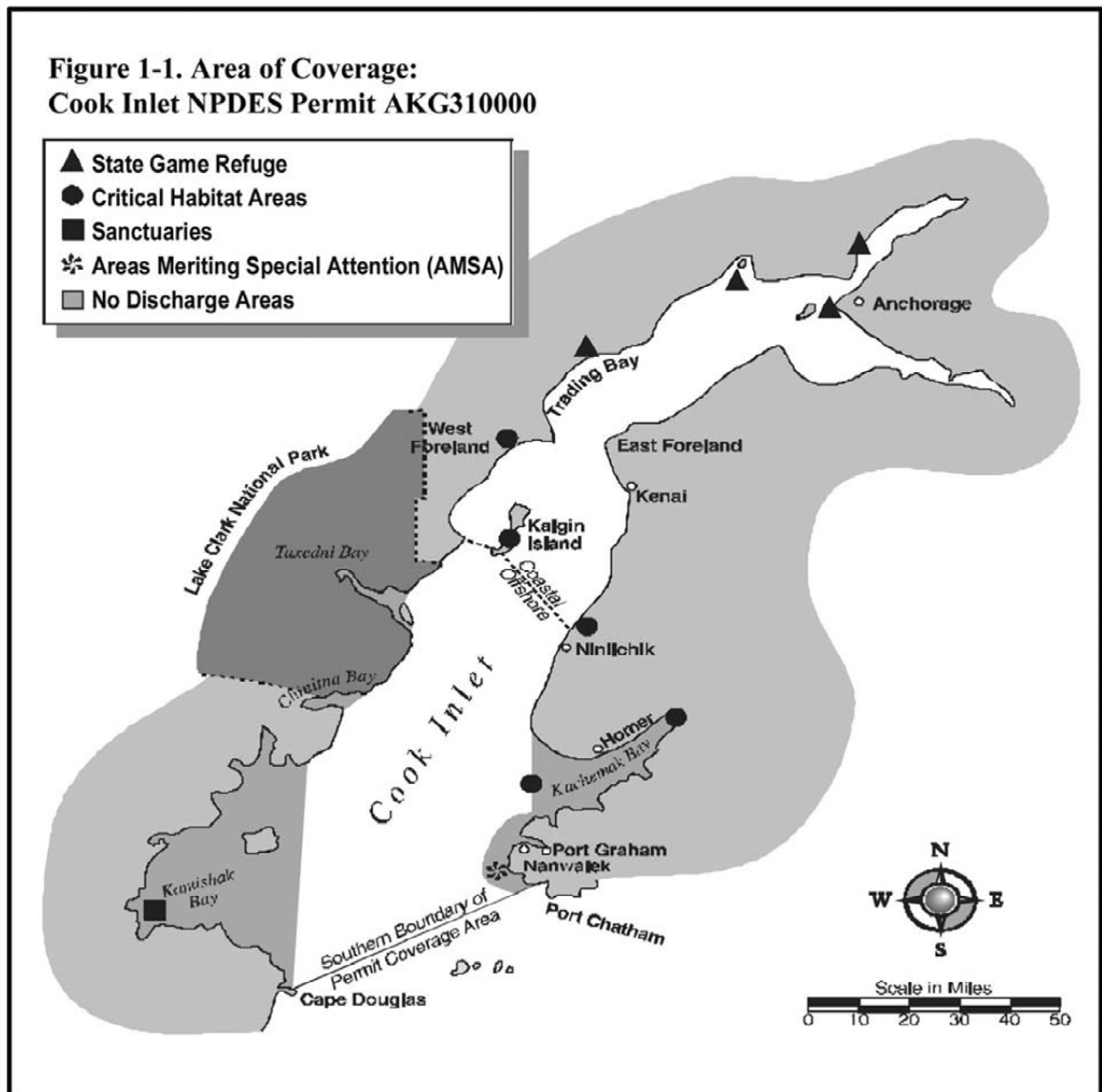
1.1 PURPOSE OF ACTION

EPA proposes a number of changes to the expired permit. The area of coverage is proposed to be expanded to coincide with the area under the Minerals Management Service (MMS) lease sales 191 and 199 (see Section 1.3) (Figure 1-2) and adjoining territorial seas. Discharges from exploratory facilities in that area are proposed to be authorized by the reissued permit. Although EPA does not, at this time, propose to authorize the discharge of produced water, drilling fluids, or drill cuttings from development and production facilities in the area covered by the new MMS lease sales, some discharges from those new source facilities are also proposed to be authorized. Those new source discharges include sanitary wastewater, domestic wastewater, deck drainage, and miscellaneous discharges such as cooling water and boiler blowdown. Discharges associated with the use of synthetic-based drilling fluids from exploration facilities are proposed to be authorized within the new lease area.

Water quality-based limits under the expired permit have been reexamined based on current dispersion modeling practices and proposed mixing zones. The largest mixing zones would be necessary to meet water quality standard for total aromatic hydrocarbons (TAH)/Total Aqueous Hydrocarbons (TAqH); the proposed mixing zones for existing facilities range from 36 to 3,016 meters. Mixing zones for whole effluent toxicity, chronic metals, and acute metals have the ranges 31-1,742 m, 9-262 m, and <1-239 m, respectively.

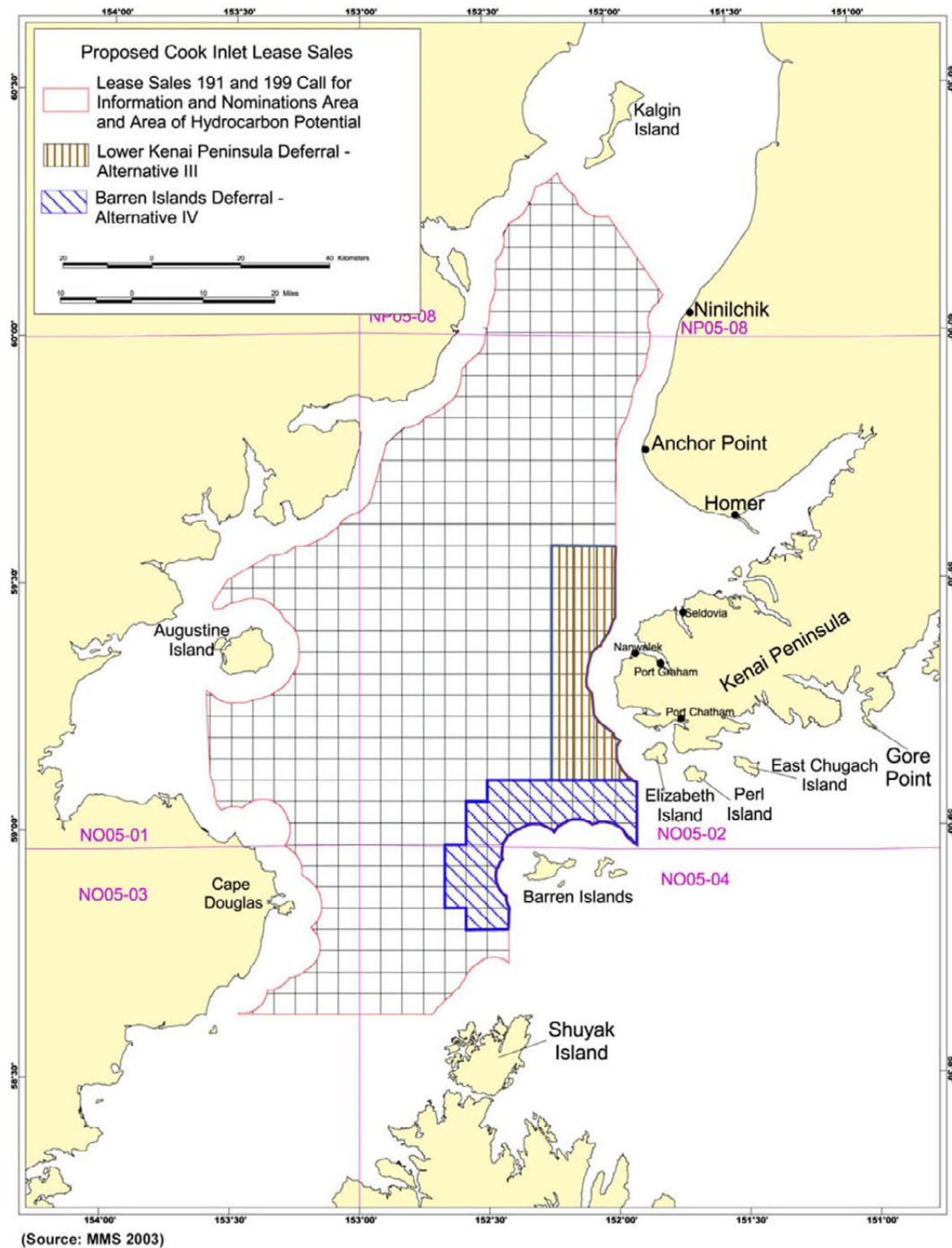
New whole-effluent toxicity and technology-based limitations are being proposed for discharges to which treatment chemicals, such as biocides and corrosion inhibitors, are added. Those chemically treated seawater discharges can include water flood wastewater, cooling water, boiler blowdown, and desalination unit wastewater. Also proposed is a change to the permit's monitoring frequency requirements that would result in increased monitoring for discharges that violate the permit's limitations. Likewise, for some pollutants that have been shown to be discharged in concentrations that are not likely to violate the permit's limitations, the monitoring frequency is proposed to be decreased.

**Figure 1-1. Area of Coverage:
Cook Inlet NPDES Permit AKG310000**



(Source: USEPA 2004)

Figure 1-2. Minerals Management Service Lease Sales 191 and 199.



1.2 NEED FOR ACTION

There are 17 offshore platforms in Cook Inlet, 13 of which are active. All but one (Osprey) of these platforms have applied for coverage under the proposed permit. There are also three onshore treatment facilities along the shores of upper Cook Inlet and approximately 221 miles of undersea pipelines, 78 miles of oil pipeline, and 149 miles of gas pipeline. Reissuance of the NPDES general permit is needed to allow existing facilities in Cook Inlet to continue operations. Figure 1-3 depicts the locations of the 19 existing oil and gas facilities in Cook Inlet that have sought coverage under the proposed permit, and that might, or might not, all operate and discharge at one time under the proposed permit. The proposed permit would authorize the following discharges in all areas of coverage:

- Drilling Fluids and Drill Cuttings
- Deck Drainage
- Sanitary Wastes
- Domestic Wastes
- Desalination Unit Wastes
- Blowout Preventer Fluid
- Boiler Blowdown
- Fire Control System Test Water
- Non-Contact Cooling Water
- Uncontaminated Ballast Water
- Bilge Water
- Excess Cement Slurry
- Mud, Cuttings, Cement at Seafloor
- Completion Fluids
- Workover Fluids
- Test Fluids
- Storm Water Runoff from Onshore Facilities

Waterflooding discharges, produced water discharges, and well treatment fluids (other than test fluids) would also be authorized for existing upper Cook Inlet development and production operations.

In 2001 Cook Inlet oil production was just under 10 million barrels annually. In that same year, gas production in the Cook Inlet region totaled 276 billion cubic feet (7.816 billion cubic meters) from 14 fields. The MMS assumes that 140 million barrels of oil and 190 billion cubic feet of natural gas could be discovered and produced from a single development in lease-sale area 191 or 199 (MMS 2003).

Figure 1-3. Oil and Gas Facilities in Cook Inlet



1.3 PROJECT LOCATION

The expired permit covers oil and gas facilities in Cook Inlet north of a line extending between Cape Douglas (at 58° 51' N latitude, 153° 15' W longitude) to the west and Port Chatham (at 59° 13' N latitude, 151° 47' W longitude) to the east (Figure 1-1). Exploratory facilities throughout that area were authorized to discharge under the expired permit. Authorization to discharge from existing facilities was limited to the northern portion of the area of coverage. That portion consists of the area north of a line extending across the inlet at the southern edge of Kalgin Island.

Under the proposed reissued permit, the area covered by the expired permit would be expanded to include facilities in the area under MMS lease sales 191 and 199 and adjoining territorial seas (Figure 1-2). That new area includes federal waters south of Kalgin Island and north of Shuyak Island. The project area is in the Cook Inlet Outer Continental Shelf Planning Area, which encompasses approximately 2.5 million acres (MMS 2003). The project area is seaward of the state of Alaska's submerged lands boundary in Cook Inlet and extends from 3 to 30 miles offshore from Kalgin Island south to near Shuyak Island. The project area excludes the Shelikof Strait. Although water depths might exceed 650 feet, the MMS expects that most, if not all, exploration and development activities would take place in shallower water. Only a small percentage of the blocks available for lease in lease areas 191 and 199 likely would be leased. Of the blocks that would be leased, only a small portion, if any, would likely result in production (MMS 2003).

1.4 PROJECT HISTORY

The upper Cook Inlet and Kenai Peninsula have an association with the petroleum industry that dates back to the 1950s. The first discovery in the region took place onshore in 1957, when oil was discovered on the Kenai Peninsula from the Swanson River #1 well. Except for the Beaver Creek Unit, which began producing oil in 1972, all other oil-producing fields are in state waters. At the height of oil production (1970), the Cook Inlet region produced 80 million barrels annually. By 1983, production had declined to 24.7 million barrels, and by 2001, production had declined to just under 10 million barrels annually. Producing quantities of natural gas were first discovered in 1959 in what is now the Kenai Gas Field. Gas production in the Cook Inlet region did not begin until 1960. By 1983, annual natural gas production had reached 196.4 billion cubic feet. In 2001, Cook Inlet Region gas produced 276 billion cubic feet (MMS 2003).

The expired general permit, which became effective on April 1, 1999, and expired on April 1, 2004, authorized discharges from exploration, development, and production facilities north of a line extending across Cook Inlet at the southern end of Kalgin Island. It also authorized discharges from exploration facilities in state and federal waters north of the line between Cape Douglas (at 58° 51' N latitude, 153° 15' W longitude) on the west side of Cook Inlet and Port Chatham (at 59° 13' N latitude, 151° 47' W longitude) on the east side. The expired general permit authorized discharges from 23 facilities operated by Unocal, Cross Timbers, Marathon, Phillips, ARCO, Forest Oil, and Forcenergy.

1.5 EPA's ROLE, RESPONSIBILITY, AND LIMITS OF AUTHORITY AND JURISDICTION

Under the National Environmental Policy Act of 1969 (NEPA), major federal actions that could significantly affect the quality of the environment must undergo an environmental review. The CEQ established regulations for implementing NEPA in 40 CFR Part 1500. EPA established regulations to govern its compliance with NEPA in 40 CFR Part 6. EPA's NEPA compliance responsibilities include the "cross-cutting" statutes, i.e., Endangered Species Act, National Historic Preservation Act, the Executive Order on Environmental Justice, and Executive Orders on wetlands, floodplains, farmland, and biodiversity. The NEPA compliance program requires analysis of information regarding potential impacts, including environmental, cultural, and public health impacts; development and analysis of options to avoid or minimize impacts; and development and analysis of measures to mitigate adverse impacts. Areas of consideration under NEPA may include natural resources and cultural, social, and economic issues.

EPA's Effluent Limitations Guidelines and New Source Performance Standards (NSPS) for Coastal Subcategory projects (those located in coastal waters) in the Oil and Gas Extraction Point Source Category went into effect on December 16, 1996 (61 *Federal Register* [FR] 66123). EPA promulgated NSPS for Offshore Subcategory facilities (facilities located in Territorial Seas or Federal Waters) on March 4, 1993 (58 FR 12454). Any oil and gas extraction projects that began construction after the promulgation of these NSPS, are defined as "new sources" that require NPDES permits and are subject to the provisions of NEPA. New exploratory facilities are not considered new sources.

Because EPA has regulatory authority for only the NPDES discharges, this EA focuses primarily on the water quality impacts associated with the new source NPDES discharges and cumulative effects due to existing sources. However, in recognition of EPA's responsibilities under NEPA to fully disclose all potential environmental impacts related to the proposed action, potential impacts other than those associated with the NPDES discharges are described in this EA. In addition, the EA identifies the specific federal and state agencies under whose permit authorization mitigation measures for environmental impacts may be applicable.

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